

**REMARKS:**

Claims 1-12 are pending in this application. Claim 12 is amended herein. Support for the amendment can be found in the specification at page 10, lines 8-9. Reconsideration of the outstanding rejections is respectfully requested for the reasons that follow.

***Claim rejections - 35 U.S.C. §112, indefiniteness***

Claims 1, 3, 5-10 and 12 were rejected under 35 USC §112 as being indefinite. The Examiner contended the term "acyl" was indefinite. It was contended that the term "acyl" could embrace acids of S, P or As.

Applicants submit that, in chemistry, especially organic chemistry, the term "acyl" has been understood as an organic acid radical in which the OH group is removed; a compound of general structure RCO-, wherein the R is aliphatic, alicyclic or aromatic and "CO-" is the carbonyl group. See the attached copies of relevant pages of McGraw-Hill Dictionary of Chemistry, McGraw-Hill, International Edition (1986), the Condensed Chemical Dictionary, Reinhold, Seventh Edition (1966) and the printouts of Wikipedia entry and Princeton University's WordNet entry.

It was also questioned whether "C1-C6" counts the carbonyl carbon of the acyl group. Applicants point out that claim 2 recites the formyl group. Therefore, it is submitted that it is clear that the carbonyl carbon of the acyl group is counted.

Further, the Examiner asked what the R looks like if the "acyl" group is RCO-. As shown by the attached copies relating to the commonly accepted definition of the term "acyl," such R group is an aliphatic, alicyclic or aromatic group. Therefore, it is submitted that one skilled in the art would have clearly understood what structures the term "acyl" encompasses.

In addition, claim 12 as amended recites steps and therefore obviates the indefiniteness. Thus, it is submitted that the indefiniteness rejection is overcome.

***Claim rejections - 35 U.S.C. 101, unpatentable subject matter***

It is submitted that the amendment in claim 12 obviates this rejection.

***Claim objections***

It is submitted that claim 1 is allowable and therefore, claims 2 and 4 are allowable in the current form.

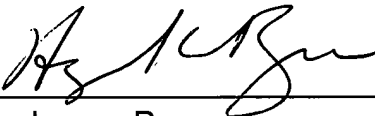
***Specification***

The abstract was objected to as too vague. A substitute abstract is provided herein, and it is submitted that the substitute abstract obviates the objection to the specification.

It is submitted that, in view of the foregoing, all pending claims are patentable and the application is in condition for allowance.

The Commissioner is authorized to charge any fees or overpayments to Deposit Account No. 02-2135. An additional copy of this document is enclosed.

Respectfully submitted,

By  \_\_\_\_\_

Hyunkweon Ryu

Attorney for Applicants

Registration No. 58,283

ROTHWELL, FIGG, ERNST & MANBECK, p.c.

Suite 800, 1425 K Street, N.W.

Washington, D.C. 20005

Telephone: (202)783-6040

Facsimile: (202)783-6031

the purpose of producing radioisotopes from the stable elements. The characteristics of the induced radiations are sufficiently distinct that different elements in the sample can be accurately identified. The technique is particularly useful when concentrations of the elements are too small to be measured by ordinary means. Trace elements have thus been determined in drugs, fertilizers, foods, fuels, glass, minerals, dusts, water, toxicants, etc.

**activator.** Some specific examples are:

1. A substance which increases the effectiveness of a rubber vulcanization accelerator. Zinc oxide is the most important example but zinc laurate, zinc stearate, and litharge are also used.
2. A substance which is required in trace quantities to impart luminescence to certain crystals. Silver and copper are activators for zinc sulfide and cadmium sulfide pigments.

**active amyl alcohol.** See 2-methyl-1-butanol.

**active carbon.** See activated carbon.

**activity.** A term applied to several chemical concepts.

1. Chemical activity (thermodynamic activity): A quantity replacing actual molar concentration in mathematical expressions for the equilibrium constant so as to eliminate the effect of concentration on equilibrium constant.
2. Activity coefficient: A fractional number which when multiplied by the molar concentration of a substance in solution, yields the chemical activity. This term gives an idea of how much interaction exists between molecules at higher concentrations.
3. Activity of metals or elements: An active element will react with a compound of a less active element, to produce the latter as the free element, and the active element ends up in a new compound. Thus, magnesium, an active metal, will displace copper from copper sulfate to form magnesium sulfate and free metallic copper; chlorine will liberate iodine from sodium iodide, and sodium chloride is formed. See electromotive series.
4. Activity product: The number resulting from the multiplication of the activities of slightly soluble substances. This is frequently called the solubility product.
5. Catalytic activity: See catalysis.
6. Optical activity: The existence of optical rotation (q.v.) in a substance.
7. Radioactivity: q.v.

**activity series.** See electromotive series.

**"Acto."**<sup>51</sup> Trademark for refined petroleum sodium sulfonate. Used as an oil-soluble emulsifier and surface-active agent.

**"Actol."**<sup>243</sup> Trademark for a series of polyoxypropylene diols, triols, and polyols. These vary in molecular weight from about 1,000 to 3600; the diols and triols are almost insoluble in water, but the polyols are completely miscible with it.

Containers: 55-gal drums.

Uses: In the production of urethane foams, elastomers, and coatings.

**"Actox" Zinc Oxides.**<sup>268</sup> Trademark for a line of lead-free zinc oxides manufactured by the American process produced from zinc ore. Used as an activating grade for rubber.

**acyl.** An organic acid radical in which the OH group is replaced by some other substituent; RCO-. Examples: acetyl, CH<sub>3</sub>CO-; benzoyl, C<sub>6</sub>H<sub>5</sub>CO-.

**ADA.** Abbreviation for acetonedicarboxylic acid. See beta-ketoglutaric acid.

**"Adalin."**<sup>182</sup> Trademark for carbromal or bromodiethylacetylurea (q.v.).

**1-adamantanamine hydrochloride.** See amantadine hydrochloride.

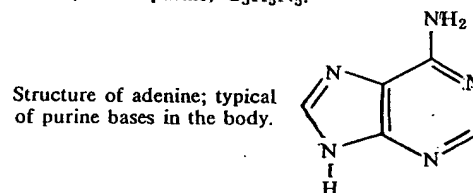
**adamantane** (diamantane; sym-tricyclodecane) C<sub>10</sub>H<sub>16</sub>. Has unique molecular structure. White crystals; m.p. 205-210°C (subl); about 99% pure. Derivatives have been suggested as drugs.

**adamsite.** See phenarsazine chloride.

**addition polymers.** Polymers formed by the direct addition or combination of the monomer molecules with one another, without the formation of low molecular weight by-products such as water.

**adducts.** See inclusion complexes.

**adenine** (6-aminopurine) C<sub>5</sub>H<sub>5</sub>N<sub>5</sub>.



Found in ribonucleic acids and deoxyribonucleic acids, nucleosides, nucleotides, and many important coenzymes.

**Properties:** White, odorless microcrystalline powder with sharp salty taste. M.p. 360-5°C (dec.). Very slightly soluble in cold water; soluble in boiling water, acids and alkalies; slightly soluble in alcohol; insoluble in ether and chloroform. Aqueous solutions are neutral.

**Derivation:** By extraction from tea; by synthesis from uric acid; prepared from yeast ribonucleic acid.

**Use:** Medicine and biochemical research.

**adenine hemisulfate** (C<sub>5</sub>H<sub>5</sub>N<sub>5</sub>)<sub>2</sub>·H<sub>2</sub>SO<sub>4</sub>·2H<sub>2</sub>O. Properties and uses similar to adenine.

**adenine hydrochloride** C<sub>5</sub>H<sub>5</sub>N<sub>5</sub>·HCl·½H<sub>2</sub>O. Properties and uses similar to adenine.

**adenine riboside.** See adenosine.

**adenohypophyseal luteotropin.** See luteotropin.

**adenosine** (adenine riboside; 9-beta-D-ribofuranosyladenine) C<sub>5</sub>H<sub>4</sub>N<sub>5</sub>·C<sub>5</sub>H<sub>9</sub>O<sub>4</sub>. The nucleoside composed of adenine and ribose.

**Properties:** White, crystalline, odorless powder with mild, saline or bitter taste. M.p. 229°C. Quite soluble in hot water; practically insoluble in alcohol.

**Derivation:** Isolation following hydrolysis of yeast nucleic acid.

**Use:** Biochemical research.

**adenosine diphosphate** (5'-adenylphosphoric acid; ADP; adenosine 5'-pyrophosphate; adenosine diphosphoric acid) C<sub>10</sub>H<sub>15</sub>N<sub>5</sub>O<sub>10</sub>P<sub>2</sub>. A nucleotide of great importance in the maintenance of life. It is found in all living cells and is important in the storage of energy for chemical reactions.

\*See "Shipping Regulations," page xv.

Reference numbers refer to name of manufacturer. See "List of Manufacturers," page v.

## 14      activated complex

**activated complex** An energetically excited state which is intermediate between reactants and products in a chemical reaction.

**activation** Treatment of a substance by heat, radiation, or activating reagent to produce a more complete or rapid chemical or physical change.

**activation energy** The energy, in excess over the ground state, which must be added to an atomic or molecular system to allow a particular process to take place.

**activator** 1. A substance that increases the effectiveness of a rubber vulcanization accelerator; for example, zinc oxide or litharge. 2. A trace quantity of a substance that imparts luminescence to crystals; for example, silver or copper in zinc sulfide or cadmium sulfide pigments.

**active amyl alcohol** See 2-methyl-1-butanol.

**active element** A chemical element which has one or more radioactive isotopes.

**activity** 1. The intensity of a radioactive source. Also known as radioactivity.  
2. A thermodynamic function that correlates changes in the chemical potential with changes in experimentally measurable quantities, such as concentrations or partial pressures, through relations formally equivalent to those for ideal systems.

**activity coefficient** A characteristic of a quantity expressing the deviation of a solution from ideal thermodynamic behavior; often used in connection with electrolytes.

**actol** See silver lactate.

**actomyosin** A protein complex consisting of myosin and actin; the major constituent of a contracting muscle fibril.

**actual cubic feet per minute** A measure of the volume of gas at operating temperature and pressure, as distinct from volume of gas at standard temperature and pressure. Abbreviated acfm.

**AcU** See actinouranium.

**acyclic compound** A chemical compound with an open-chain molecular structure rather than a ring-shaped structure; for example, the alkane series.

**acyl** A radical formed from an organic acid by removal of a hydroxyl group; the general formula is RCO, where R may be aliphatic, alicyclic, or aromatic.

**acylation** Any process whereby the acyl group is incorporated into a molecule by substitution.

**acyl azide** See acid azide.

**acylcarbene** A carbene radical in which at least one of the groups attached to the divalent carbon is an acyl group; for example, acetylcarbene.

**acyl carnitine** See fatty acyl carnitine.

**acyl carrier protein** A protein in fatty acid synthesis that picks up acetyl and malonyl groups from acetyl coenzyme A and malonyl coenzyme A and links them by condensation to form  $\beta$ -keto acid acyl carrier protein, releasing carbon dioxide and the sulfhydryl form of acyl carrier protein. Abbreviated ACP.

**acyl-coenzyme A** See fatty acyl-coenzyme A.

# Acyl

From Wikipedia, the free encyclopedia

In chemistry, the term **acyl** or **acyl group** refers to a functional group obtained from an acid by removal of a hydroxyl group.

Most commonly, the acyl group is derived from a carboxylic acid. It therefore has the formula  $RC(=O)-$ , with a double bond between the carbon and oxygen atoms (thus forming a carbonyl group), and a single bond between R and the carbon; R denotes the group that occurs in the original carboxylic acid  $RCOOH$ .

The names of acyl groups are typically derived from the corresponding acid and end in -yl, such as

- formyl (systematic name: methanoyl), derived from formic acid (systematic name: methanoic acid),
- acetyl (systematic name: ethanoyl), derived from acetic acid (systematic name: ethanoic acid),
- propionyl (systematic name: propanoyl), derived from propionic acid (systematic name: propanoic acid),
- benzoyl, derived from benzoic acid,
- acryl, derived from acrylic acid.

(Note that methyl, ethyl, propyl, butyl etc. are not acyl but alkyl groups, derived from alkanes.)

Acyl groups can also be derived from other types of acids such as sulfonic acids, phosphonic acids, and some others.

Acyl groups can be used in Friedel-Crafts acylation.

## External link

- Definition of "Acyl group" from the IUPAC *Gold Book* (<http://www.iupac.org/goldbook/A00123.pdf>) (PDF file)

Retrieved from "<http://en.wikipedia.org/wiki/Acyl>"

Categories: Organic compound stubs | Functional groups

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**Noun**

- **S: (n) acyl, acyl group** (any group or radical of the form RCO- where R is an organic group) *"an example of the acyl group is the acetyl group"*

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